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EXAMINER

MANOHARAN, MUTHUSWAMY GANAPATHY

ART UNIT	PAPER NUMBER
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2617

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/724,383

Applicant(s)

WON, CHANG-BAI

Examiner

Muthuswamy G. Manoharan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-20 and 22-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-20 and 22-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: missing element relationship to perform the function as a hinge device. Possible inclusion could be a shaft or a connecting member.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,4-8,10, and 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohtsuka (US 5923751)

Regarding **claim 1**, Ohtsuka teaches a mobile communication terminal comprising: a first body (Figure 1); a second body (figure 1); and a hinge apparatus,

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which rotatively couples the first body to the second body, the hinge apparatus comprising (Figure 2):

a first hinge unit comprising a first hinge housing formed approximate to a side edge of the first body; and a first hinge member inserted into the first hinge housing (items 2 and 19 in Figure 2);

a second hinge unit (Figure 2); a coupling hinge member disposed between the first and second hinge units (item 17 of Figure 2)

a rotation control device (item 20 in Figure 2);

wherein the second hinge unit comprises: a second hinge housing formed approximate to a bottom edge of the second body (item 6 in Figure 2); a second hinge member inserted into the second hinge housing (item 13 in Figure 1); and a spring disposed adjacent to the second hinge member in the second hinge housing (item 18 in Figure 2); and

wherein rotation-preventing surfaces are formed on a circumferential surface of each of the first, second, and coupling hinge members (items 19a, 17a, 13a in Figure 2).

Regarding **claim 4**, Ohtsuka teaches the mobile communication terminal of claim 1, further comprising a shaft disposed in the second hinge housing, wherein the shaft passes through the spring (item 14 in Figure 2), second hinge member and coupling hinge member (item 8 in Figures 2).

Regarding **claim 5**, Ohtsuka teaches the mobile communication terminal of claim 1, wherein guiding surfaces are formed on opposing surfaces of the first hinge member and coupling hinge member (items 19b and 17b in Figure 2).

Regarding **claim 6**, Ohtsuka teaches the mobile communication terminal of claim 5, wherein a groove, which is formed on the guiding surface of the first hinge member (item 17c in Figure 2), engages a corresponding protrusion (item 19b in Figure 2) formed on the guiding surface of the coupling hinge member.

Regarding **claim 7**, Ohtsuka teaches the mobile communication terminal of claim 5, wherein a groove, which is formed on the guiding surface of the coupling hinge member, engages a corresponding protrusion formed on the guiding surface of the first hinge member (items 17c and 19b in Figure 2).

Regarding **claim 8**, Ohtsuka teaches the mobile communication terminal of claim 3, wherein a convex portion and a concave portion are each formed on opposing surfaces of the coupling hinge member and the second hinge member such that the convex and concave portions of the coupling hinge member correspond to the concave and convex portions, respectively, of the second hinge member (items 17b in Figure 2 and 17c in Figure 8).

Regarding **claim 10**, Ohtsuka teaches the mobile communication terminal of claim 1, wherein first and second hinge contact surfaces are formed on an inner surface of each of the first and second hinge housing members, respectively, to engage the rotation-preventing surfaces of the first and second hinge members, respectively, to prevent rotation of the first and second hinge members, respectively (items 2b, 6b in Figure 2 and 8).

Regarding **claim 18**, Ohtsuka teaches a folding type mobile communication terminal, wherein a hinge apparatus rotatively couples a first body to a second body, the hinge apparatus comprising:

- a first hinge housing formed approximate to a side edge of the first body (item 6 in Figure 2);

- a first hinge member inserted into the first hinge housing (item 6 in Figure 2);

- a second hinge housing formed approximate to a bottom edge of the second body (item 6 in Figure 2);

- a second hinge member inserted into the second hinge housing ;

- a coupling hinge member disposed between the first and second hinge members (item 17 in Figure 2) ;

- a spring disposed adjacent to the second hinge member in the second hinge housing (items 14 in Figure 2);

- a shaft disposed in the second hinge housing, wherein the shaft passes through the spring, second hinge member and coupling hinge member (item 8 in Figure 2);

- a rotation control device (item 20 in Figure 2);

- a rotation preventing surfaces formed on a circumferential surface of each of the first second and coupling hinge members (items 19a,17a,13a in Figure 2); and

- first and second hinge contact surfaces formed on an inner surface of each of the first and second hinge housing members, respectively, wherein the first and second hinge contact surfaces engage the rotation-preventing surfaces of the first and second

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hinge members, respectively, to prevent rotation of the first and second hinge members, respectively (items 2b, and 6b in Figure 2).

Regarding **claim 19**, Ohtsuka teaches the folding type mobile communication terminal of claim 18, wherein the hinge apparatus further comprises: guiding surfaces formed on opposing surfaces of the first hinge member and coupling hinge member, wherein a groove is formed on the guiding surface of the first hinge member and engages a corresponding protrusion formed on the guiding surface of the coupling hinge member (items 19b and 17c in Figure 2).

Regarding **claim 20**, Ohtsuka teaches the folding type mobile communication terminal of claim 18, wherein a convex portion and a concave portion are each formed on opposing surfaces of the coupling hinge member and the second hinge member such that the convex and concave portions of the coupling hinge member correspond to the concave and convex portions, respectively, of the second hinge member (items 16a and 17c in Figure 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11-17 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohtsuka (US 5923751) in view of Wahl et al. (hereinafter Wahl) (US 6101676).

Regarding **claim 11**, Ohtsuka further teaches the mobile communication terminal of claim 1, wherein the rotation control device comprises: a cap receiving portion formed on an inner surface of the first hinge housing (item 20 in Figure 2). Ohtsuka did not teach specifically a rotation control cap; a cap receiving groove formed on the cap receiving portion; a cap protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion; a female screw thread formed on an inner circumferential surface of the rotation control cap; and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap. However, Wahl teaches in an analogous art a rotation control cap (item 700 in Figure 7); a cap receiving groove formed on the cap receiving portion; a cap protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion (item 700 in Figure 7; Col. 3, lines 65-67); a female screw thread formed on an inner circumferential surface of the rotation control cap (Figure 4); and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap (Figure 4). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have a rotation control cap; a cap receiving groove formed on the cap receiving portion; a cap

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protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion; a female screw thread formed on an inner circumferential surface of the rotation control cap; and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap as an alternate device to perform the function such as sliding movement in an axial direction.

Regarding **claim 12**, Ohtsuka further teaches the mobile communication terminal wherein the rotation control cap comprises an exposed portion to serve as a receiving point for a user (Figure 1). Ohtsuka did not teach specifically receiving point for torque applied by a user. However, Wahl teaches in an analogous art receiving point for torque applied by a user (Col. 3, lines 65-67). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have a receiving point where torque can be applied by a user as an alternate way of performing the function such as sliding movement in an axial direction.

Regarding **claim 13**, Ohtsuka teaches all the particulars of the claim except wherein the exposed portion comprises gripping means. However, Wahl teaches in an analogous art wherein the exposed portion comprises gripping means (Figure 7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have wherein the exposed portion comprises gripping means to avoid slipping. This is well known in the art.

Regarding **claim 14**, Ohtsuka teaches all the particulars of the claim except wherein the gripping means comprises plurality of knurls. However, Wahl teaches in an analogous art wherein the gripping means comprises plurality of knurls (Figure 7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to have wherein the gripping means comprises plurality of knurls to avoid slipping. This is well known in the art.

Regarding **claim 15**, Ohtsuka further teaches the mobile communication terminal of claim 11, further comprising a protrusion formed on each of the inner surfaces of the first hinge housing and control cap such that the protrusion formed on the inner surface of the first hinge housing prevents lateral movement of the control cap towards the second hinge housing (item 20a and 2c in Figure 2).

Regarding **claim 16**, Ohtsuka teaches the mobile communication terminal of claim 1, wherein a plurality of terminal manipulation devices are disposed on an inner surface of the first body (Figure 1).

Regarding **claim 17**, Ohtsuka teaches the mobile communication terminal of claim 1, wherein a display screen is disposed on an inner surface of the second body (Figure 1).

Regarding **claim 22**, Ohtsuka teaches the folding type mobile communication terminal of claim 18, wherein the rotation control device (item 20 in Figure 2) comprises: a cap receiving portion formed on an inner surface of the first hinge housing (item 2 in Figure 2).

Ohtsuka did not teach specifically a rotation control cap having an exposed portion to serve as a receiving point for torque applied by a user; a cap receiving groove formed on the cap receiving portion; a cap protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion; a female screw thread formed on an inner circumferential surface of the rotation control cap; and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap.

However, Wahl teaches in an analogous art wherein a rotation control cap having an exposed portion to serve as a receiving point for torque applied by a user; a cap receiving groove formed on the cap receiving portion; a cap protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion; a female screw thread formed on an inner circumferential surface of the rotation control cap; and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap (items 202b in Figure 4, Col. 3, lines 65-67). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use a rotation control cap having an exposed portion to serve as a receiving point for torque applied by a user; a cap receiving groove formed on the cap receiving portion; a cap protrusion formed on an outer circumferential surface of the rotation control cap, wherein the cap receiving groove receives the cap protrusion; a female screw thread formed on an inner circumferential surface of the rotation control

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cap; and a male screw thread formed on a circumferential surface of the first hinge member, wherein the male screw thread engages the female screw thread of the rotation control cap. This is clearly a design choice, for producing axial displacement either by pressing the control cap or by turning the screw using torque.

Regarding **claim 24**, Ohtsuka teaches a method of unfolding a folding type mobile communication terminal to a desired opening angle, the method comprising the steps of:

a rotation control device in a predetermined direction so that a first hinge member is forced away from an outer edge of the terminal, wherein a coupling hinge member is displaced into a second hinge housing (Abstract);

lifting a first body of the terminal, which is rotatively coupled to a second body, so that a protrusion on the coupling hinge member engages a groove on the first hinge member (Col. 3, lines 39-59); and

releasing the first body of the terminal at the desired opening angle, wherein an elastic force generated by a spring housed in a second hinge housing presses the coupling hinge member against the first hinge member, thereby creating a frictional force to maintain the desired opening angle (Col. 5, lines 1-13).

Ohtsuka did not teach specifically, rotating a rotation control device. However, Wahl teaches in an analogous art rotating a rotation control device (item 700 in Figure 7; Col. 3, lines 65-67). Therefore, it would be obvious to one of ordinary skill in the art

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at the time of invention to use the method by rotating a rotation control device as an alternate method for providing sliding movement in an axial direction.

Claims 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over AP (applicant admitted prior art) in view of Wahl et al. (hereinafter Wahl) (US 6101676).

Regarding **claim 23**, Jung teaches a method of unfolding a folding type mobile communication terminal to a maximum opening angle, the method comprising the steps of: lifting a first body of the terminal, which is rotatively coupled to a second body, so that a convex portion of the coupling hinge member passes over a convex portion of a second hinge member; and releasing the first body of the terminal so that a spring housed in a second hinge housing expands and forces the convex portion of the coupling hinge member to completely pass over the convex portion of the second hinge member, thereby completely unfolding the terminal (Figure 2). AP did not teach specifically rotating a rotation control device in a predetermined direction so that a first hinge member is forced towards an outer edge of the terminal, wherein a coupling hinge member is displaced into a first hinge housing. However, Wahl teaches in an analogous art wherein rotating a rotation control device in a predetermined direction so that a first hinge member is forced towards an outer edge of the terminal, wherein a coupling hinge member is displaced into a first hinge housing (Figure 4). This

modification provides a method of providing axial displacement by rotating a rotation control device.

Regarding **claim 24**, Ohtsuka teaches a method of unfolding a folding type mobile communication terminal to a desired opening angle, the method comprising the steps of:

lifting a first body of the terminal, which is rotatively coupled to a second body, so that a protrusion on the coupling hinge member engages a groove on the first hinge member; and

releasing the first body of the terminal at the desired opening angle, wherein an elastic force generated by a spring housed in a second hinge housing presses the coupling hinge member against the first hinge member, thereby creating a frictional force to maintain the desired opening angle (Figure 4).

Jung did not teach specifically a rotation control device in a predetermined direction so that a first hinge member is forced away from an outer edge of the terminal, wherein a coupling hinge member is displaced into a second hinge housing. However, Wahl teaches in an analogous art a rotation control device in a predetermined direction so that a first hinge member is forced away from an outer edge of the terminal, wherein a coupling hinge member is displaced into a second hinge housing (Figure 4). This modification provides a method of providing axial displacement by rotating a rotation control device.


Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muthuswamy G. Manoharan whose telephone number is 571-272-5515. The examiner can normally be reached on 7:00AM-3:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eng George can be reached on 571-272-7495. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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